SYSTEM IV FROM COMPUTER IMAGE: SOMETHING NEW IN VIDEO ANIMATION

by Peter Sørensen

The brand new System IV video computer is the fourth generation of electronic animation machines made by the pioneering Computer Image Corporation of Denver, Colorado. Like its predecessors, Animac, Scanimate and Caesar, it generates its images in real time (at actual viewing speed; most other computer animation systems take much longer), an invaluable asset to the creative decision-making process and the principal reason why video computers are so economical to use.

Similar to Scanimate and Caesar, it stretches, twists and explodes the raster (TV picture) to create its graphics, animation and special effects. Like Caesar, it consists of a hybrid analog/digital computer, with the fast but dumb analog portion taking orders from the smarter digital portion. But System IV outdoes all its predecessors with its speed and versatility in creating motion graphics, cartoon animation, abstract patterns and even objects and environments with accurate spacial perspective.

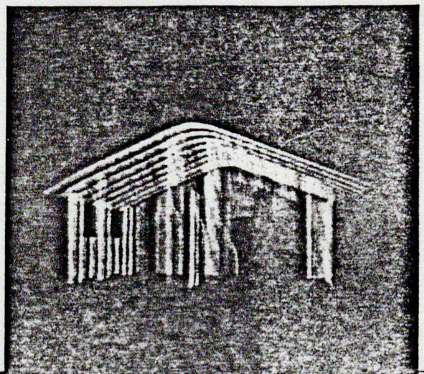
System IV's ability to construct and animate objects with perfect perspective will probably be its most attractive feature at first. Although its imagery doesn't pretend to compete with the photo-realistic, scene simulating imagery of purely digital animation, the latter can cost 10 times as much in both money *and* time. Objects synthesized by System IV have a decidedly electronic look, but that can be used to your advantage as long as you aren't required to fool your reviewers into believing they are looking at a real object. Instead, exploit the origin of the imagery—it *looks* like it comes from a computer.

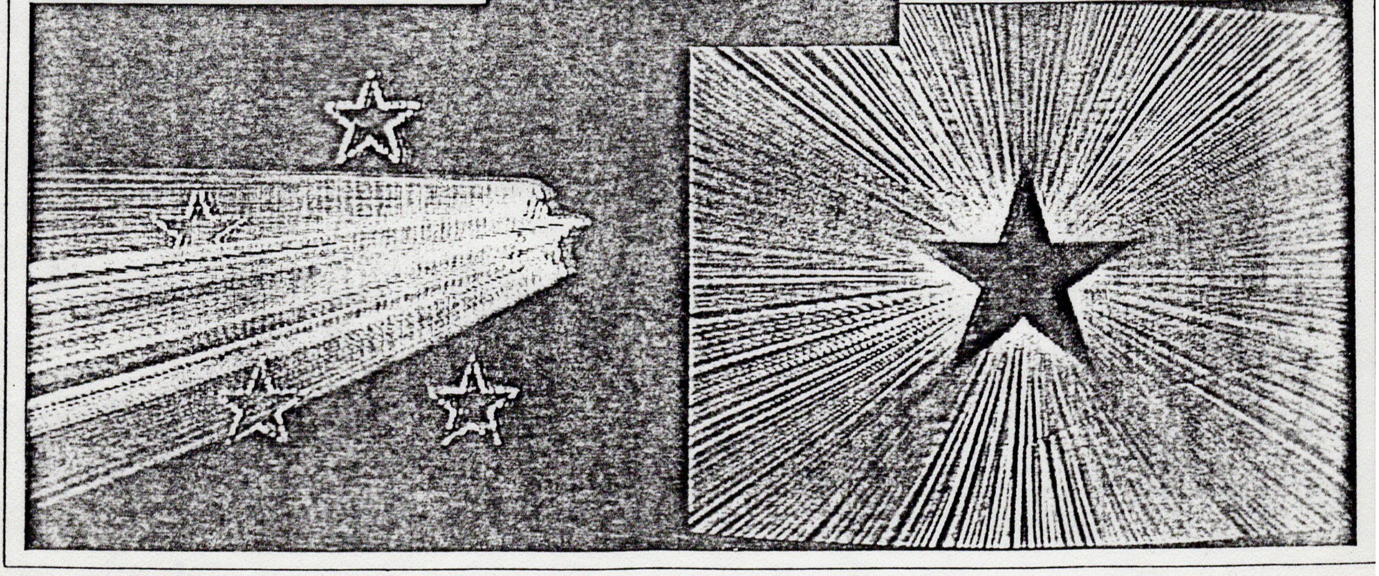
The character animation it produces doesn't look computerized to the untrained eye, however. While System IV won't be keeping the Disney animators awake worrying at night, it has more advantages than disadvantages when compared with "Saturday morning" cel animation. Its motion is more alive because the characters can be kept moving all the time (in hand-painted animation the characters spend a lot of time stock still, with only their mouths moving, giving an occasional blink) and once again, it's cheaper and faster by several orders of magnitude. Caesar, the previous generation computer, is also capable of character animation, but the new machine is more versatile, capable of doing more things at once, and much easier to use from the operator's point of view.

Myron "Dave" Holman, the senior Caesar operator/artist, pointed out that the ability to see the animation develop as it is worked on gives the animator an unprecedented opportunity to experiment. With Caesar he or she can readily create 20 seconds of animation a day, and on the new computer that figure should increase significantly. "In my first five years at Computer Image, I produced the rough equivalent of 40,000 feet of 35mm animation—which is close to a lifetime of work for a cel animator." (He was a cel animator for years, so he knows what he's talking about.)

System IV can also outperform Scanimate, that old workhorse of analog computer graphics. Scanimate literally revolutionized broadcast graphics 10 years ago. With it, words are made to fly around, twist inside out and turn into other things. It is also famous for its abstract patterns, which are the video equivalent of synthesizer music. These patterns can be made to look like "Spirograph" designs, explosions, starfields and infinite varieties of psychedelic spaghetti.

The front of a Scanimate computer is studded with a bewildering array of hundreds of knobs and switches which control the functions of the machine. But with all its complexity, it is limited to moving only five pieces of raster through only five events at a time. To do more requires additional passes on video tape. System IV, however, reduces all those knobs to four,





The System IV video computer generates images in real time, but outdoes its predecessors with its speed and versatility. (clockwise from top) A 3-D video raster house, star and trailer.

with appropriate pushbuttons used to select the parameters to be adjusted by those four knobs and, thanks to its digital memory, can be assigned to do more functions than the old machine, with 30 (or even more) pieces of raster moving through 9,999 events!

The possibilities are legion, and inviting to talented performers on the machine like Susan Crouse-Kemp. “You find something new every day! You sit down to the machine and say, ‘Wonder if it will do this.’ It may take awhile to figure it out, but you try it, and there it is. It’s a very creative system for the operator. There are a lot of things that will be discovered with it over the years, as people happen upon them.”

The System IV design team, under senior hardware/software architect Dr. Ed Tajchman, includes Bill Altimus, Howard Lipson and Jim Wolf. All the Computer Image machines have been conceived and guided to completion by video visionary Lee Harrison, the amiable and appropriately eccentric president and chairman of C.I. According to Dr. Tajchman, “We started out using oscillators to do things to the video signal, and then we had some digitally controlled function generators in Caesar. But, we’ve gone much further in System IV; we have six of these function generators in an electronic switching matrix so we can insert them in a number of different perameters, and that gives us a great deal of shaping capability. These function generators are digitally controlled so we can program in any type of waveform. In addition to the pre-programmed standard sine, ramp, triangle and square waves, we have a white noise waveform and waveforms to create stars, pentagons and all kinds of unique shapes.”

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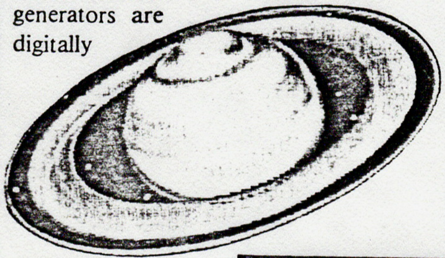
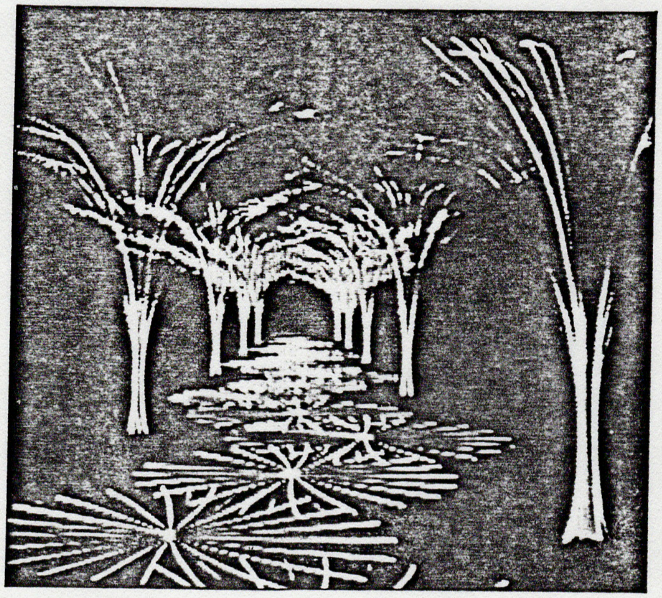


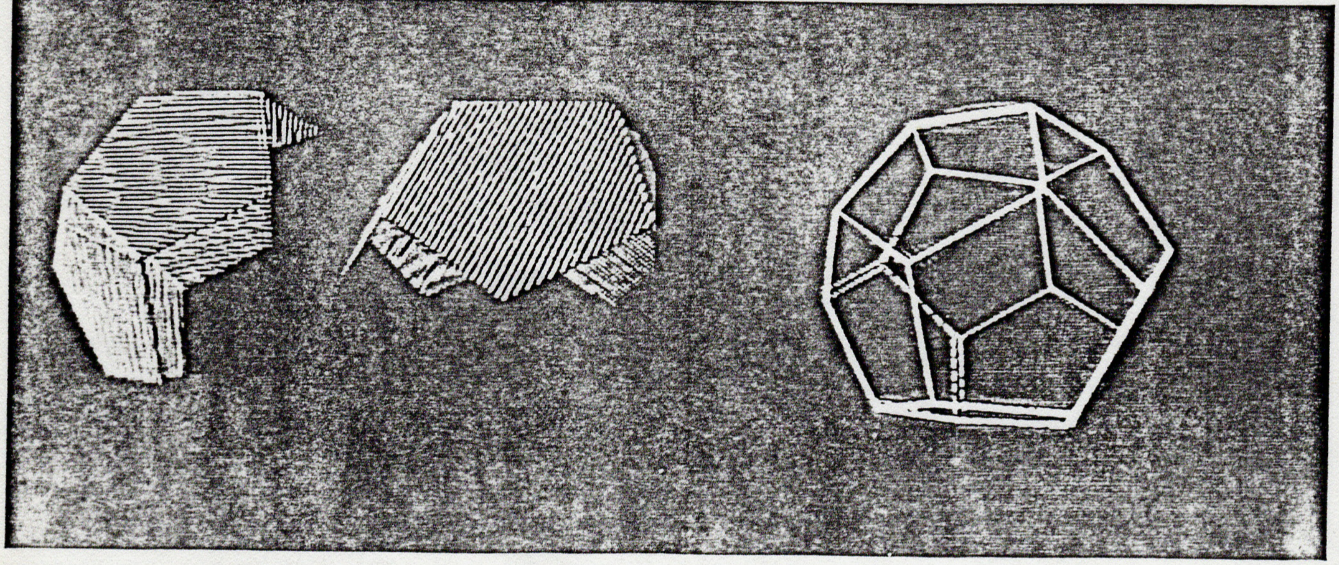


The “creation” of Saturn (left) and a landscape (below) demonstrate System IV’s shaping capabilities.

C.I. Vice President Andy Gardner explains that the new computers would be leased instead of sold. Machines can be built in NTSC, PAL or SECAM versions. They have already been installed in Luxemburg, Mexico and Chile, and they are going to be delivering one to Editel in Hollywood this summer.

Production jobs that are a natural for this versatile tool would be those that show the operation of machinery, with parts assembling themselves, or medical educational films, or special effects to enhance live action (C.I. will be adding a magical touch to the “The Powers of Matthew Star” TV series), in addition to the old video razzle-dazzle, motion graphics and cartoon animation.

While the system is the obvious choice for “fire department” last-second work, it is advisable that you give the production personnel as much lead time as possible to get the most satisfactory results. As with Scanimate and Caesar, when you produce a job on System IV you can become personally involved with the creation of the animation, working with the art director as the scenes are programmed, watching the real time playbacks until satisfied with the results, and finally giving the go-ahead: “Tape it!”□



The perspective able to be produced by the system will be useful in industrial, medical and educational applications.